PTZ CAMERA

ZC-PT SERIES

INSTALLATION GUIDE

EN

Thank you for your purchase of this product. Before operating the product, please read this instruction manual carefully to ensure proper use. Please store this instruction manual in a safe place for future reference, after you have read it.

Preface

The information provided in this manual was current when published. The company reserves the right to revise and improve its products. All specifications are subject to change without notice.

Notice

To work with the PTZ cameras, any installer or technician must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical connections
- Thorough familiarity with the contents of this manual

Important Information

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, DO NOT INSTALL OR OPERATE THIS PRODUCT. Contact your dealer for assistance.

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Regulation

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning Notices

- **Handle the camera with care**
  Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handing or storage.

- **Do not dismantle the camera**
  To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Contact a qualified service person for servicing.

- **Do not block cooling holes on the bracket**
  This camera has a cooling fan inside. Blocking the cooling holes leads to a build up of heat inside the camera and may cause malfunctions.

- **Do not operate the camera outside the specified temperature, humidity or power source rating range**
  Use the indoor camera under conditions where the temperature is between 0~ 40°C (32 ~104°F) and the outdoor camera at -50~ 50°C (-58 ~122°F) and in humidity of below 90%.

- **Do not use strong or abrasive detergents when cleaning the camera body**
  Use a dry cloth to clean the camera when dirty. If the dirt is hard to remove, use a mild detergent and wipe gently.

- **Never point the camera towards the sun**
  Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, the camera may be smeared or damaged.

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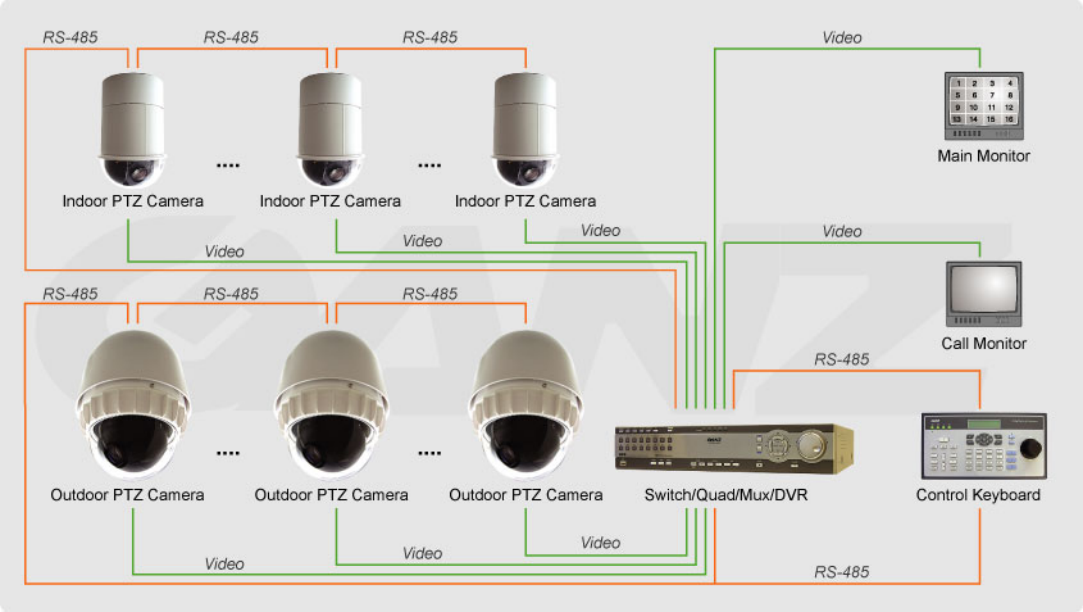
1. Introduction

The PTZ camera is designed to deliver superb performance and durability with an intelligent and stylish housing that is suitable in any security and surveillance installation. In addition, it supports one cabling for easy installation. Large set of built-in protocols, including Ganz-PT, Ganz-S, Pelco, VCL, Philips, AD-422 (Manchester), etc., provide connectivity to other suppliers' surveillance systems.

General Operation Requirements:

A minimum of one control device is required for operation, such as a control keyboard, a DVR or a PC. The PTZ camera contains a built-in receiver that decodes commands originating from a control device.

Connect dome cameras to other devices, as shown in the diagram below, to complete a video surveillance system.



NOTE: The use of a repeater is recommended if the system network distance exceeds 1.2 km (4000 feet). In this case, placing the repeater at the centre of the network distance could help to maintain signals. Refer to the repeater user manual for detailed information.

2. Standard Package Content

Before proceeding, please check the box contains the items listed here. If any item is missing or has defects, DO NOT install or operate the product and contact your dealer for assistance.

Indoor PTZ Camera Standard Package

Camera Body

Hard Ceiling Mount and Decoration Ring

5.4” Optical Cover

User’s Manual & Quick Guide

Fixing Plate

50-cm cable for Power, Video, RS-485 and Alarm

Outdoor PTZ Camera Standard Package

Camera Body & Vandal Proof Cover

50-cm cable for Power, Video, RS-485 and Alarm

User’s Manual & Quick Guide

Lubricant

Water-proof rubber

Screws

Security screw set

3. PTZ Camera Setups and Cable Connection

Before installing or connecting the PTZ camera, please refer to this section and complete preparation, switch setting and communication switch settings.

3.1 Preparations for Indoor PTZ Camera Setups

There will be a PE cloth sheet covered inside the dome cover and a lens cap on the lens for shipping protection. Follow the steps below to remove those protective materials.

Step 1: Unpack the package and take out the dome body.

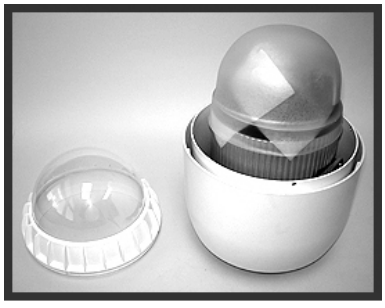
Step 2: Rotate the protective cover.

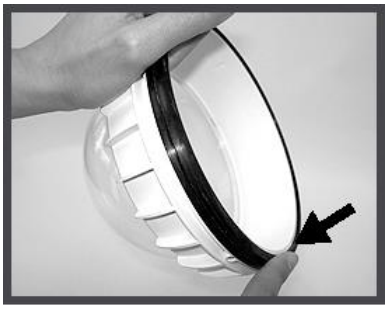
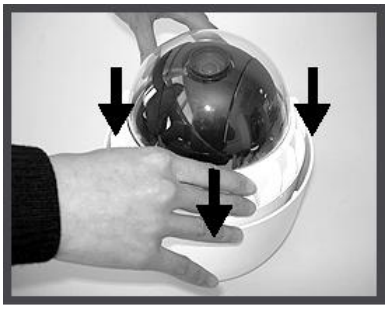
Step 3: Remove the PE cloth sheet and take off the lens cap.

Step 4: Attach the dome cover to the dome body.

3.2 Preparations for Outdoor PTZ Camera Setups

The following installation procedure is for the outdoor PTZ camera equipped with sunshield housing. Please follow the steps below to complete dome housing installation.

STEP 1 Unpack the package and take out the dome body.	
STEP 2 Rotate the top holder and take it off from the dome body.	

STEP 3 Remove the protective cover and PE cloth.	
STEP 4 Attach the dome cover to the dome body. Before doing that, apply some lubricant on the cover's water-proof rubber to make the installation process smoother.	
Note that the tiny protrusion on the dome cover must align with one of the four holes on the dome body.	
STEP 5 Gently pressure the dome cover downward with two hands on the side of it.	

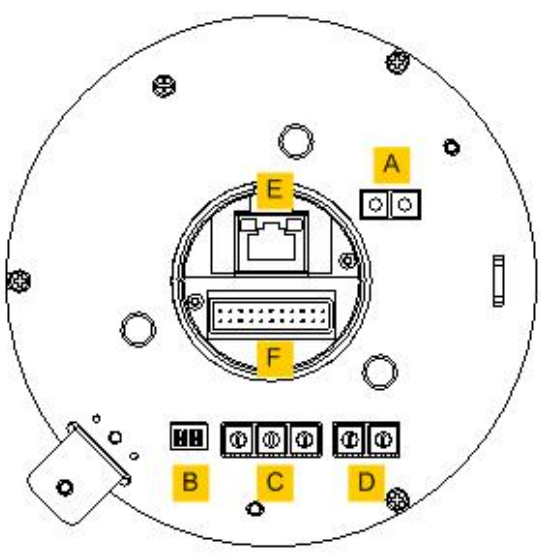
DO NOT press the cover, as shown in the figure; this might cause damage to the dome body.	
STEP 6 Screw the dome cover and body together.	
STEP 7 Set the switches located on the bottom of the dome body. Refer to section 3.3 PTZ Camera Setups for detailed information about various switch setting.	

3.3 PTZ Camera Setups

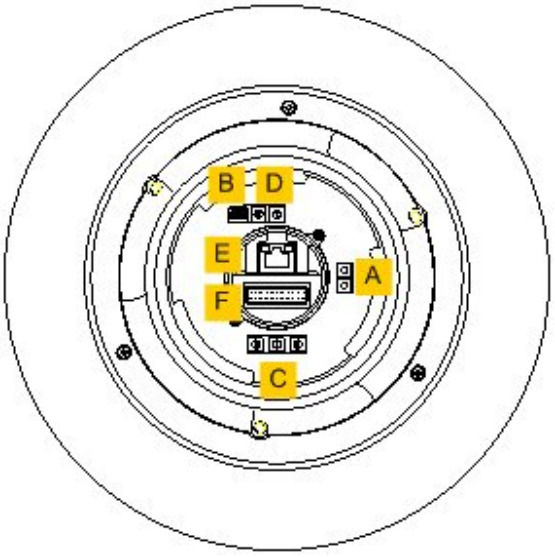
Before connecting the PTZ camera to other devices of the surveillance system, please complete the camera ID and communication switch settings. These switches are located on the bottom of the PTZ camera.

3.3.1 Switch Definition

Please refer to the following figures and table for switch location and definitions.



Indoor PTZ camera

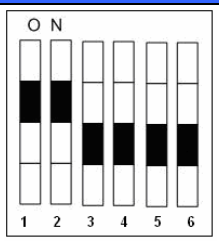


Outdoor PTZ camera

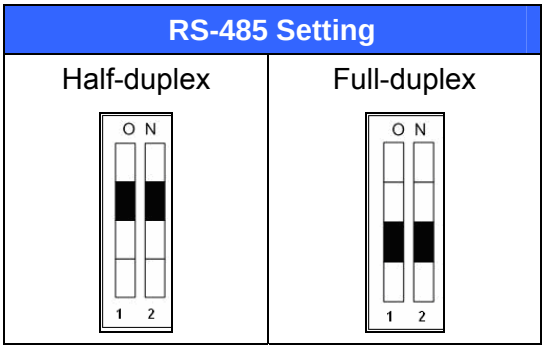
A	Reserved
B	Communication Switch
C	PTZ camera ID Switch
D	PTZ camera Control Protocol Switch
E	RJ-45 Connector (for IP PTZ camera only)
F	22-Pin Connector

3.3.2 Communication Switch Setting

The table below shows the function of each pin within the communication switch.

Communication Switch		
	**Pin 1**	RS-485 Setting
	Pin 2	
	Pin 3	Termination
	Pin 4	Line Lock
	Pin 5	System Initialization
	Pin 6	Reserved

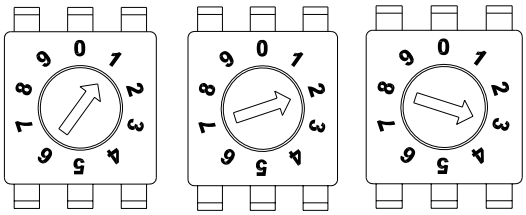
RS-485 is the interface that allows the PTZ camera to communicate with its control unit; the RS-485 configuration on the PTZ camera and the control unit must therefore be the same. The default RS-485 setting is half-duplex. Please do not change the default setting without seeking the advice of a qualified specialist or the supplier. Pin 3 and pin 4 are used for termination and line lock adjustment respectively. Pin 5 is mainly used after updating the software and changing protocol.



3.3.3 Camera ID Setting

Use the switch to change your PTZ camera ID by turning the arrow to the desired number. For example, if the camera ID is 123, the ID switch should be set as below.

NOTE: No two PTZ cameras should be given the same ID, or communication conflict may occur.



centesimal decimal single digit

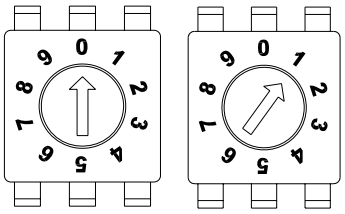
NOTE: The number “0” should locate upwards as shown in above diagram for correct switch definition.

3.3.4 PTZ Camera Control Protocol Setting

A protocol is a specific set of rules and procedures used for data communication. Define the protocol you are going to use based on the devices in your surveillance system. Generally, you should use a single protocol even if the devices are supplied by different manufacturers. Use the switch to set your PTZ camera control protocol and the baud rate. Refer to the table below and turn the arrow to choose a protocol for your camera.

Switch no.	Protocol	Baud rate
00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600
07	Ganz-PT	9600
08	AD422	4800
09	DM P	9600
11	Pelco D	4800
12	Pelco D	9600
13	Pelco P	2400
14	Pelco P	9600
16	Ganz-S	4800
17	Ganz-S	9600
18	Ganz-S	19200
19	Ganz-S	38400

For example, select protocol Pelco D with a baud rate of 2400, the ID switch should be set as shown below.



decimal single digit

3.4 Camera Cable Definition and Requirements

For operation, the integrated PTZ camera requires the video cable to carry the video signals to the remote viewing site, power cable to power the PTZ camera and RS485 data cable to carry commands from the control device.

3.4.1 Cable Requirements

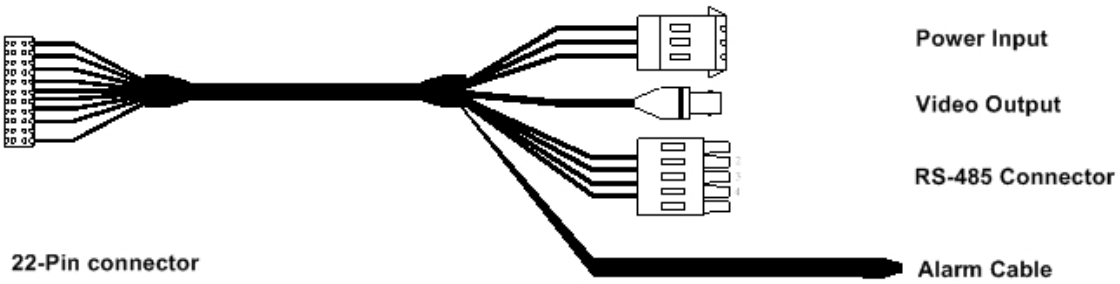
For operation, the PTZ cameras require video and data cables as described below:

- The video cable sends video signals to a remote viewing site. Using a coaxial BNC cable to send video signals is recommended.
- RS-485 cable carries commands from a control device to the PTZ cameras. A CAT 5, 24 gauge cable is recommended.
- The power cable provides AC 24V power supply to the PTZ camera.

NOTE: Ensure power supply corresponds with the PTZ camera's power requirement, or product impairment will occur. If any mistake happens, please contact with a qualified maintenance personnel.

3.4.2 22-Pin Data Cable

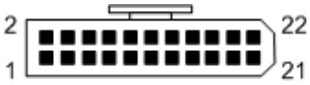
A 50 cm data cable (as shown below) is supplied with the PTZ camera for quick installation, e.g. for demonstration or testing purposes. The cable design requires an additional alarm cable. Refer to the next section for 22-pin connector definition.



NOTE: Be careful not to pull the cables improperly during installation. Additionally, it is suggested to fasten the cables after cable connection is completed.

3.4.3 22-Pin Connector Definition

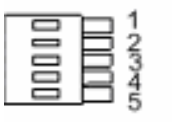
With the 22-pin connector, installers can simply connect the power, video and RS485 cables to the PTZ camera at once. The alarm pins are serviceable for connecting alarm input and output devices, such as alarm sensors, sirens or flashing lights with the surveillance system. For the definition of each pin, please refer to the list below. Connect the 22-pin connector to the PTZ camera when cable wiring is done.



Pin	Definition	Cable
1	AC24-1	20AWG
2	Alarm NC	24AWG
3	AC24-2	20AWG
4	Alarm NO	24AWG
5	FG	20AWG
6	Alarm COM	24AWG
7	T+	24AWG
8	R-	
9	T-	
10	R+	
11	Alarm ISOG	
12	ALM-1	
13	ALM-3	
14	ALM-2	
15	ALM-4	
16	ALM-5	
17	ALM-6	
18	ALM-7	
19	ALM-8	
20	ALM GND	
21	VGND	
22	Video	

3.4.4 RS-485 Connector

RS-485 is the interface that the PTZ camera uses to communicate with its control unit. Connect the control keyboard to the camera via the terminal block. The recommended cables for RS-485 communication are **CAT 5** cables; the maximum cable length for wire with a gauge above 24 is 4000 feet (1219 meters). If the total cable length exceeds 4000 feet, using a repeater to amplify the signals is recommended.



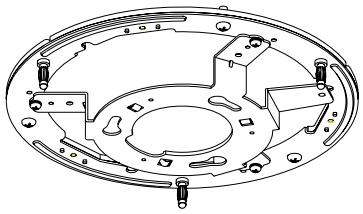
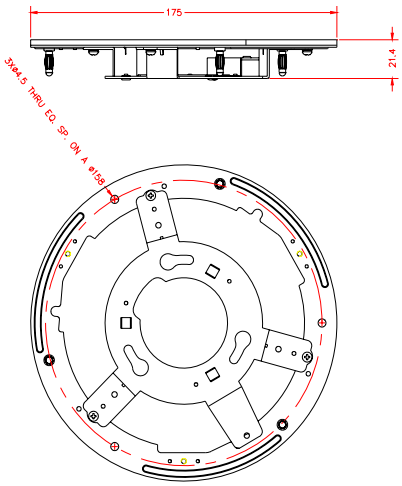
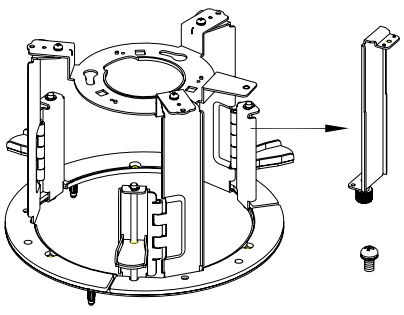
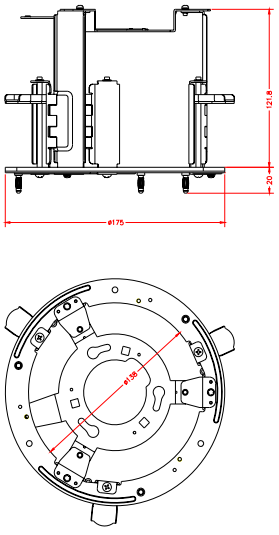
Pin	Corresponding Pins (22-Pin Connector)	Definition
1	7,10	T+, R+ (D+)
2	Reserved	
3	Reserved	
4	Reservied	
5	8,9	T-, R- (D-)

4. PTZ Camera Installation

Basing on user's installation environments, the PTZ camera can be installed on ceiling, on wall or on pole. In the following section, various camera installation accessories, installation methods and installation procedures will be described in detail.

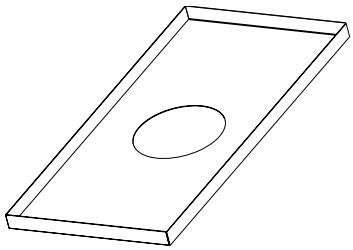
4.1 Optional Accessories

Indoor PTZ Camera Accessories

Hard Ceiling Mount (ZCA-HC200) For Hard Ceiling use. Height: 21.4mm ; Diameter of the three holes: 4.5mm ; Diameter of the bracket: 158mm; 0.2kg
 
T-Bar Ceiling Mount (ZCA-TB200) For in-ceiling Installation use. Height: 170 mm (6.7 inches); Diameter: 180 mm (7.1 inches); 0.5 kg (1.1 lbs)
 

Ceiling Panel

For ceiling mounting with T-bar. Zn platted; 610×305 mm (24×12 inches); Diameter: 155 mm (6.1 inches)



Transparent Cover/Smoke Cover

Diameter: 137 mm (5.4 inches); 127 mm (5.0 inches)

Transparent cover: ZCA-CB-5, ZCA-CB-5.4

Smoke cover: ZCA-SB-5, ZCA-SB-5.4

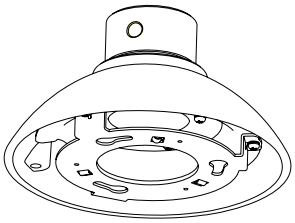
5’’ Transparent Cover 5.4’’ Transparent Cover

5’’ Smoke Cover 5.4’’ Smoke Cover

Indoor Pole Mount Adaptor (ZCA-IPA)

White; Diameter: 140 mm (5.5 inches); Height: 74 mm (2.9 inches)

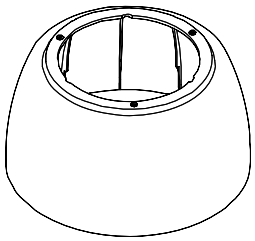
For mounting indoor PTZ camera onto a gooseneck/straight tube.



Outdoor PTZ Camera Accessories

Sunshield (ZCA-SSH)

White Color, Height: 129.5 mm (5.05 inches); Diameter: 190 mm (7.48 inches); 0.15 kg (0.33 lbs)



Vandal Proof (Transparent)/Clear Cover (PMMA)/Smoke Cover

Diameter: 137 mm (5.4 inches)

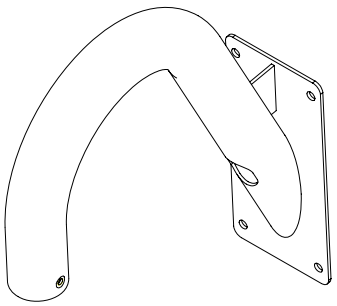
Vandal proof cover: ZCA-VP-XT / Clear cover: ZCA-CB-XT / Smoke cover: ZCA-SB-XT

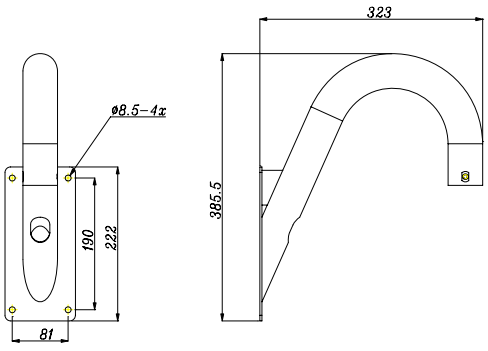
Security Screw Set (equipped with Vandal Proof Cover)

Mounting Accessories

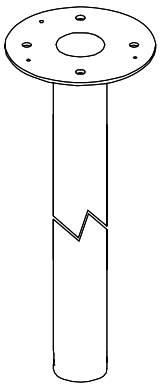
Gooseneck Tube (ZCA-GT200)

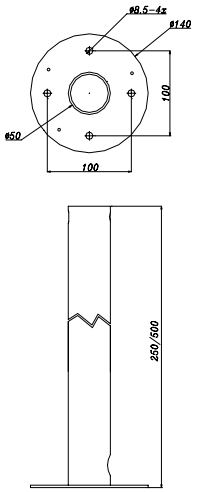
White; Iron; 298×385 mm (11.73×15.56 inches) ; 2.1 kg (4.6 lbs)
Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and waterproof rubber×1, M8*12 screw×1.



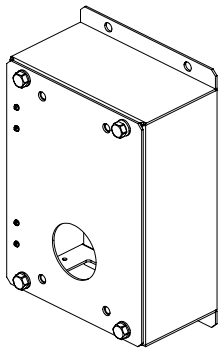


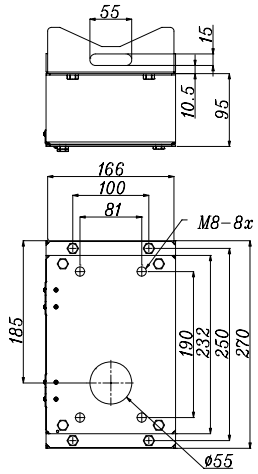
Straight Tube (ZCA-ST25, ZCA-ST50)
White; Iron; Height: 250/500 mm (9.8/19.7 inches); Diameter: 50 mm (2 inches)
1 kg (2.2 lbs) / 1.8 kg (4 lbs). Supplied with rubber washer-8×1, pendant tube washer×1, spring washer-8×1 and waterproof rubber×1, M8*12 screw×1.



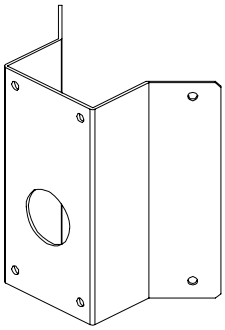


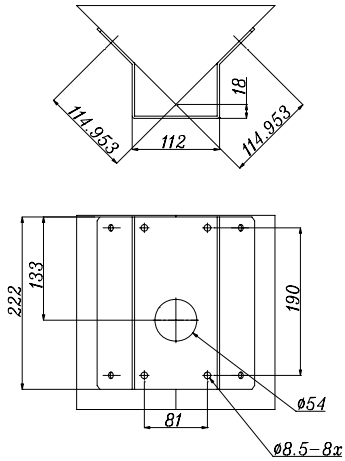
Wall Box Mounting (ZCA-WBM)
Ivory, 270(L)×166(W)×95(D) mm (10.6×6.5×3.7 inches); 2.2 kg (4.84 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4



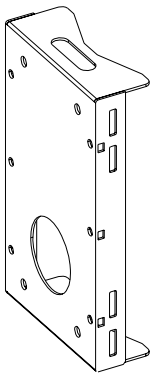


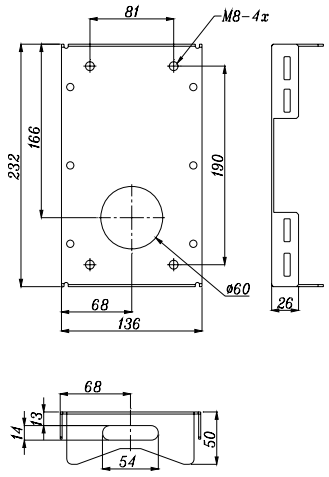
Corner Standard Mounting Plate (ZCA-CST)
White; 222(L)×204(W)×117(D) mm (8.7×8×4.6 inches); 2 kg (4.4 lbs). Supplied with washer-8×4, spring washer×4, M8*20 screw×4, M8 nut×4.



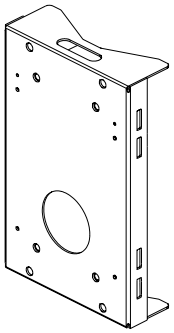


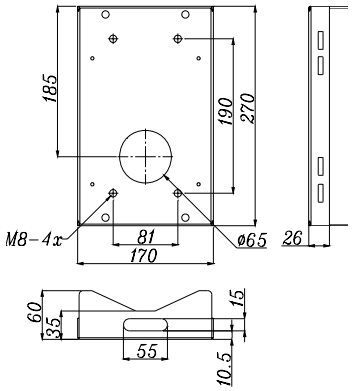
Pole Thin Direct Mounting (ZCA-PTDM)
White/Ivory; 232(L)×136(W)×60(D) mm (9.1×5.4×2.4 inches); Diameter: 112~140 mm (4.4~5.5 inches); 0.7 kg (1.6 lbs). Supplied with stainless steel straps×4, M8*16 screw×4, washer×4.



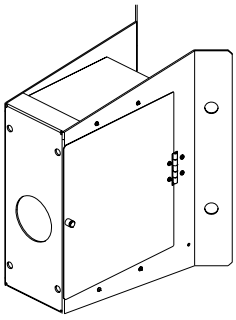


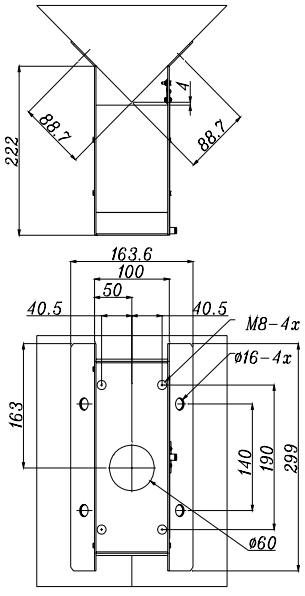
Pole Wide Direct Mounting (ZCA-PWDM)
White/Ivory; 270(L)×170(W)×60(D) mm (10.6×6.7×2.4 inches); Diameter: 112~130 mm (4.4~5 inches); 1 kg (2.2 lbs). Supplied with stainless steel straps×4, M8*16 screw×4, washer×4, spring washer×4



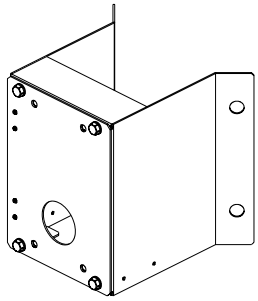


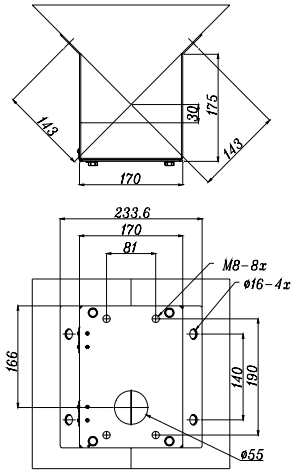
Corner Thin Box (ZCA-CTB)
White/Ivory, 300(L)×164(W)×222(D) mm (11.8×6.5×8.7 inches); 3 kg (6.7 lbs); Supplied with washer×4, M8*16 screw×4 and spring washer×4.



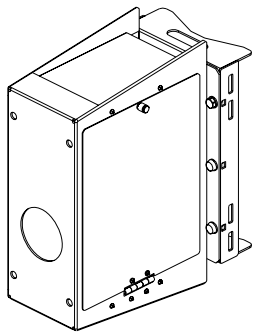


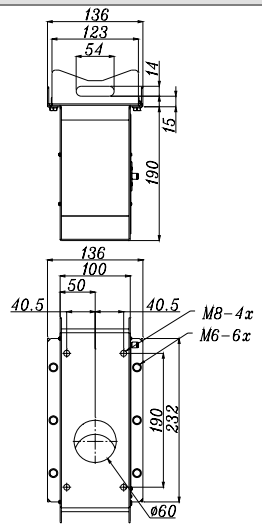
Corner Wide Box (ZCA-CWB)
White/Ivory; 232(L)×234(W)×210(D) mm (9.1×9.2×8.3 inches); 2.7 kg (6 lbs); Supplied with washer×4, M8*16 screw×4 and spring washer×4.



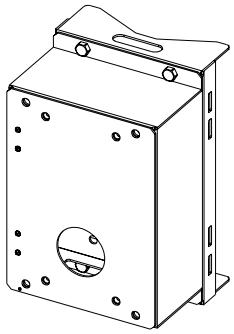


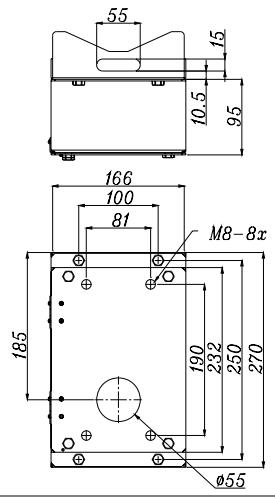
Pole Thin Box (ZCA-PTB)
White/Ivory; 291(L)×170(W)×250(D) mm (11.5×5.3×9.5 inches); 3.1 kg (6.9 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4, stainless steel straps×4.



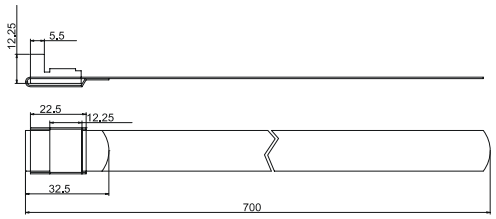


Pole Wide Box (ZCA-PWB)
White/Ivory, 270(L)×166(W)×155(D) mm (10.6×6.5×6.1 inches); 3.2 kg (7.1 lbs); Supplied with M8*16 screw×4, washer×4, spring washer×4, stainless steel straps×4.





Stainless Steel Straps
For fixing Pole Direct Mounting/Pole Box on the pole.
Width: 0.63”, 0.02 kg (0.04 lbs)

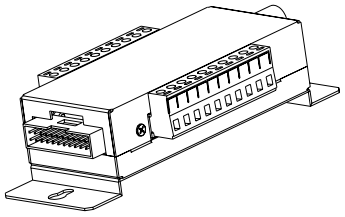


Stainless Strap Cutter (ZCA-T02)
For tension, cut and crimp stainless steel straps. 1.4 kg (3.1 lbs)
Suitable for straps width: 1/2”, 5/8”, 3/4”.

Other Application Accessories

Repeater/Converter
ZCA-RS422-485: RS-485/RS422 Converter
ZCA-RS232-485: RS232 between RS-485/RS-442
ZCA-BP-485: Bi-phase to RS-485/RS-422

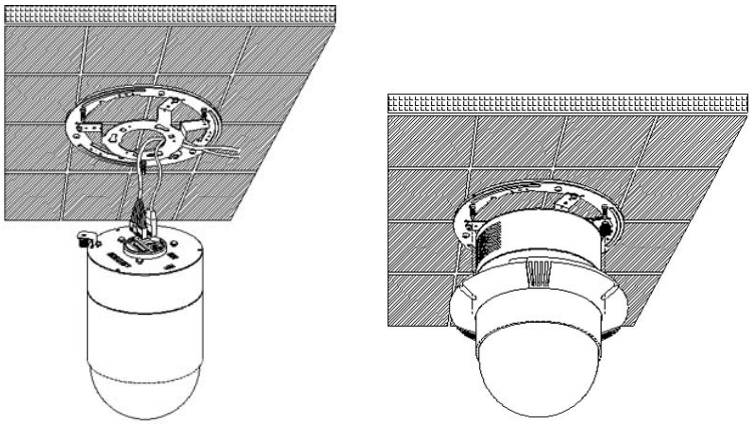
Power Box
White, 186.5×147 mm (7.3×5.8 inches); 2.6 kg (5.8 lbs)
ZCA-PSU100 (Input: 110~115VAC/Output: 24VAC 72VA)
ZCA-PSU220 (Input: 220~230VAC/Output: 24VAC 72VA)

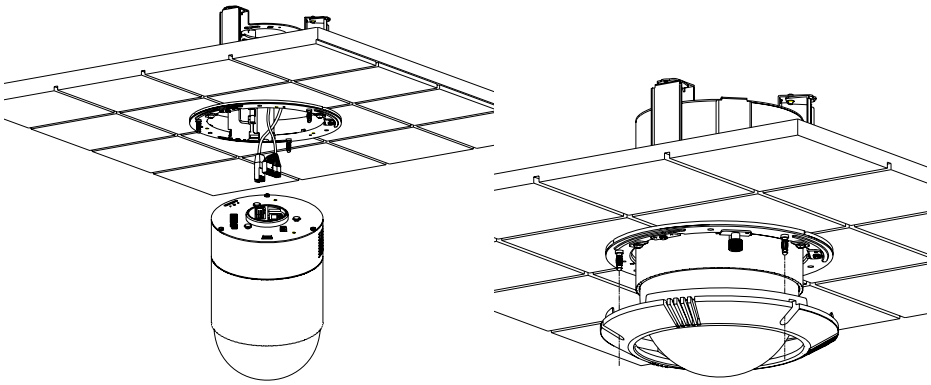
Connector Box (ZCA-CB) Recommended for wiring indoor PTZ camera alarm cables. White Color. 92×42 mm (3.7×1.7 inches); 0.13 kg (0.3 lbs); Supplied with cable×1, bracket×1 and M3*6 screw×2.

Power Adapter ZCA-100-1.5A (Input: 100~115VAC/Output: 24VAC 1.5A) ZCA-100-3.0A (Input: 100~115VAC/Output: 24VAC 3.0A) ZCA-220-1.5A (Input: 220~235VAC/Output: 24VAC 1.5A) ZCA-220-1.5A (Input: 220~235VAC/Output: 24VAC 3.0A)

4.2 Ceiling Mount

Generally, there are three kinds of PTZ camera ceiling mounting methods: hard-ceiling, in-ceiling, and mounting with straight tube. Refer to the following sections for more detailed information.

The following figures show how cables connect to the PTZ camera in different ways.

Hard ceiling mount
 (cables exposed)

In-ceiling mount
 (cables recessed)

4.2.1 Hard Ceiling Mounting (ZCA-HC200)

Hard ceiling mount is a standard accessory equipped with indoor PTZ camera. Here lists the items and tools needed to mount the camera onto the ceilings. The supplied items are all in the PTZ camera package.

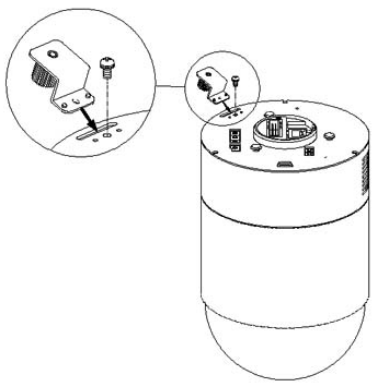
Items Needed:

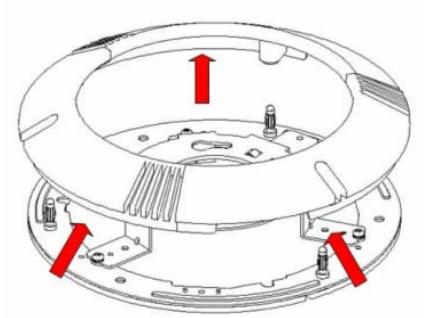
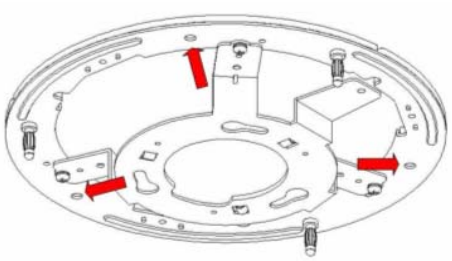
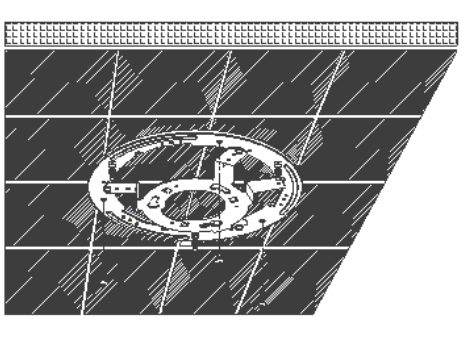
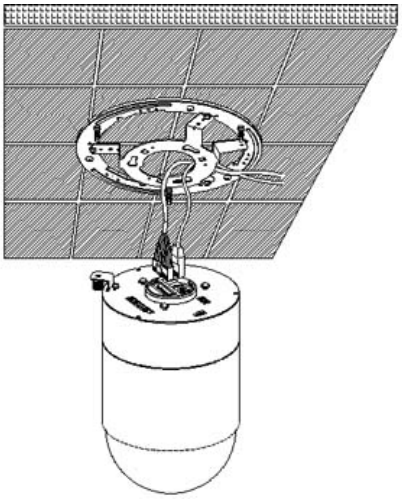
- PTZ camera
- Hard ceiling mount and Decoration ring
- Fixing plate (supplied)

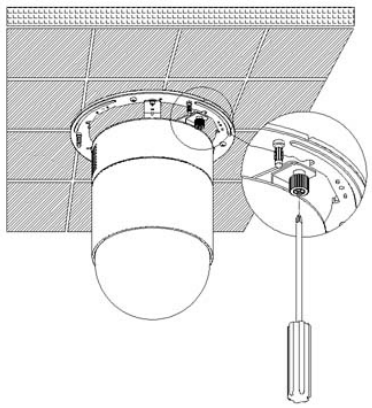
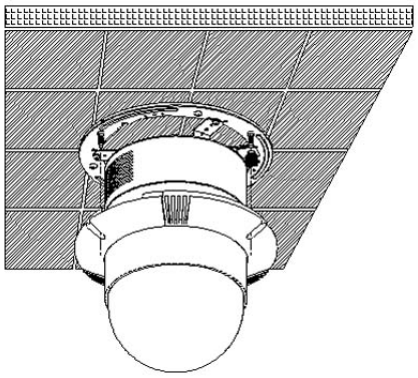
Tools Needed:

- Tool for drilling
- (+,–) Screw driver

Follow the steps below to install the PTZ camera for hard ceilings.

STEP 1 Screw the fixing plate onto your dome body.	

STEP 2 Unpack the package and take out the decoration ring. Remove the hard ceiling mount from the decoration ring.	
STEP 3 Fix the ceiling mount to the ceiling. Mark the locations where all three ceiling holes should be. **STEP 4** Drill the corresponding holes in the hard ceiling.	
STEP 5 Fix the equipped bracket to the holes on the hard ceiling with three screws.	
STEP 6 Thread the data cable through the center hole of the Mount and connect the cable to the dome body.	

STEP 7 Fix the dome body to the bracket and rotate the dome body clockwise. Tighten the fixing screw to fix the dome body in place.	
STEP 8 Fix the decoration ring to the bracket and then place the optical cover.	

4.2.2 T-Bar Ceiling Mounting (ZCA-TB200)

Follow the steps to install the PTZ camera with T-bar ceiling mount accessory.

Here lists the items and tools needed to mount the PTZ camera into the ceilings. The supplied items are all in the camera package.

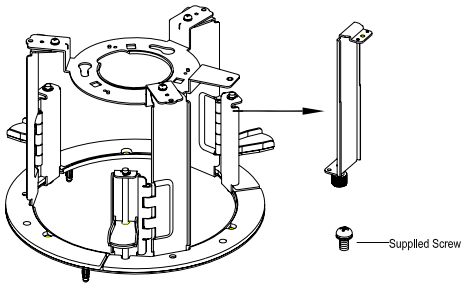
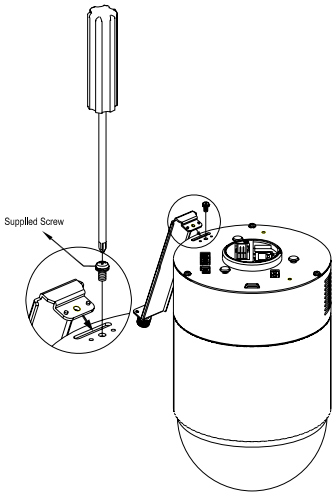
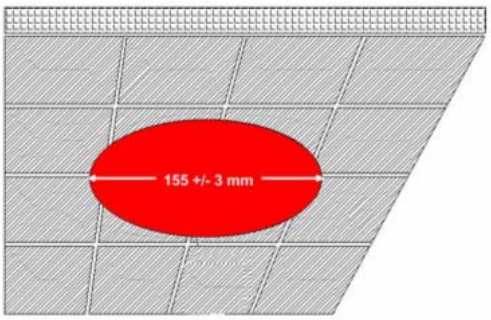
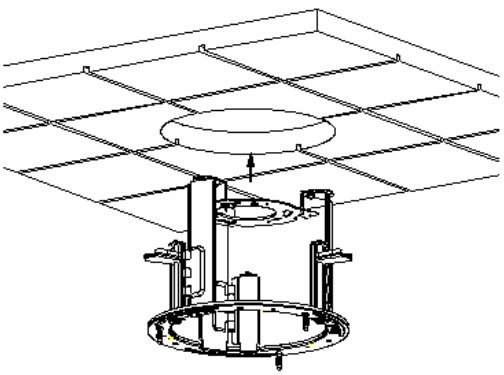
Items Needed:

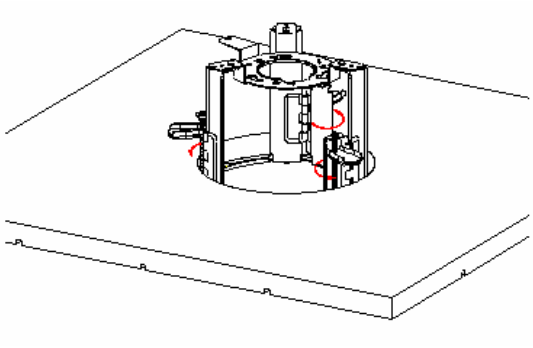
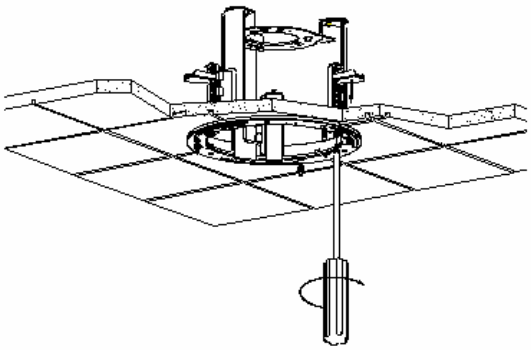
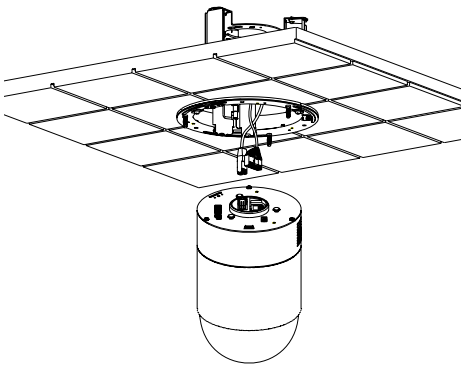
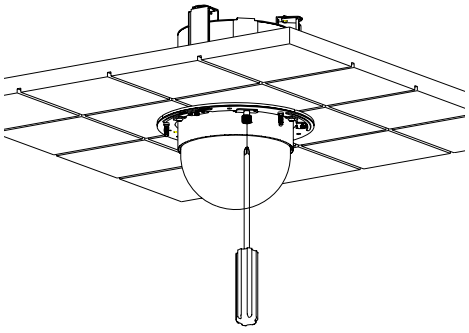
- PTZ camera
- T-bar (Optional accessory)
- Supplied screw (Equipped with T-bar)
- Red sticker (Equipped with T-bar)
- Decoration ring (Equipped with Hard ceiling mount as standard equipment)

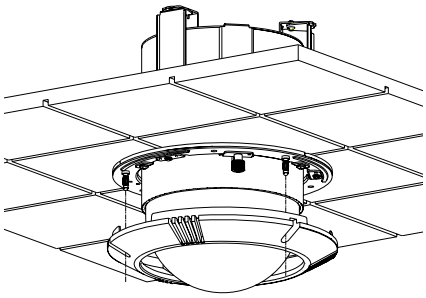
Tools Needed:

- Tool for cutting a circle on the ceiling
- (+,–) Screw driver

Follow the steps to install the PTZ camera with T-bar ceiling mount.

Step 1: Disassemble the wing (indicated in the diagram) from the T-bar ceiling mount, and take out the supplied screw in the small bag.	
Step 2: Fix the separated wing to the PTZ camera, as shown in the diagram.	
STEP 3 Place the red sticker on the ceiling plate, and cut the circle part out of the ceiling.	
STEP 4 Insert up the T-bar into the ceiling.	

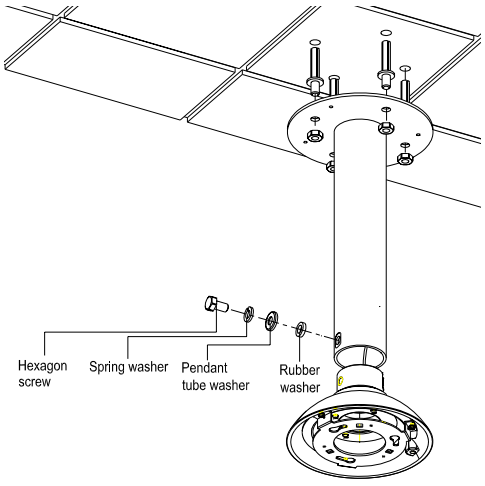
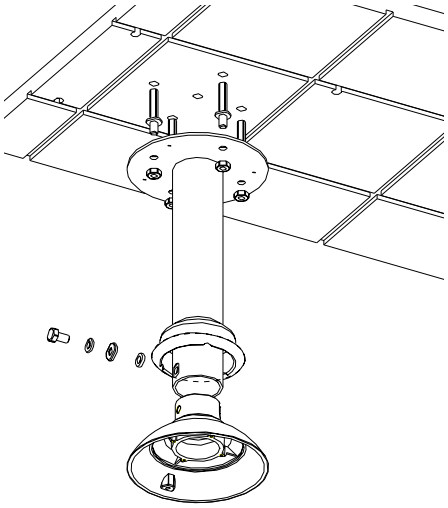
STEP 5 Rotate T-bar wings of the hinge to fix the T-bar at the edge of the ceiling hole.	
STEP 6 Tighten the screws on the hinge, and the T-bar wings will adhere to the ceiling.	
STEP 7 Put the 22-pin data cable through the center hole of the T-bar and connect it to the dome body.	
STEP 8 Mount the dome body to the Bracket and rotate it clockwise. Tighten the fixing screw to fix the dome body.	

STEP 9 Assemble the decoration ring to the T-bar and then place the optical cover.	

4.2.3 Ceiling Mount with Straight Tube (ZCA-ST25/50)

Follow the steps to mount the PTZ camera with the straight tube.

1) Ensure that the ceiling can support the weight of the PTZ camera and straight tube.
2) Make a cable entry hole on the ceiling.
3) Fix the suspension bracket to the ceiling.
4) Thread the cables through the straight tube and the indoor pole mount adaptor (indoor camera)/top holder (outdoor camera) and connect them to the PTZ camera.
5) Fix the indoor pole mount adaptor /top holder to the straight tube using the screws and washers.
6) Attach the PTZ camera to the indoor pole mount adaptor /top holder and fix them with the screw.

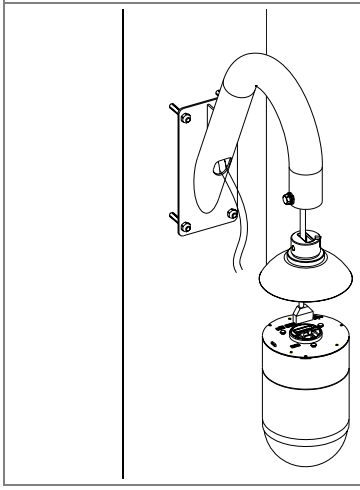
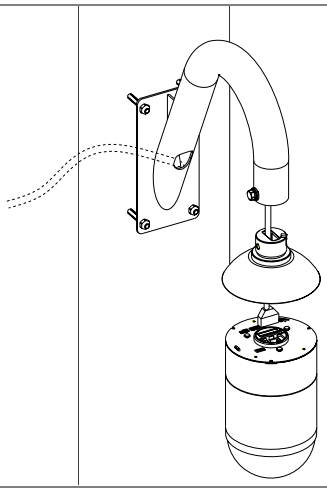
Indoor PTZ Camera (Straight tube + indoor pole mount adaptor)	**Outdoor PTZ Camera** (Straight tube + waterproof rubber)
	

NOTE: Bolts for fixing the bracket are not supplied with the gooseneck tube. Use bolts that are appropriate for the wall's structure.

4.3 Wall Mount

4.3.1 Wall Mounting with Gooseneck Tube (ZCA-GT200)

The following figures show how cables run through the tube in different ways.

Cables exposed	Cables recessed
	

Follow the steps to mount the PTZ camera with the gooseneck tube.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

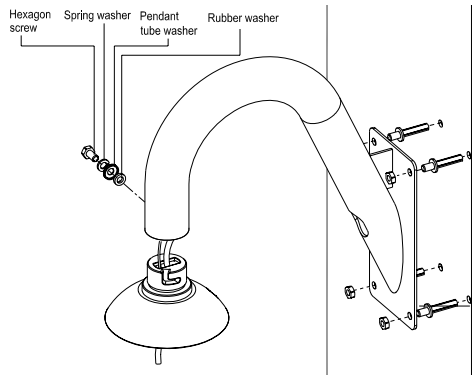
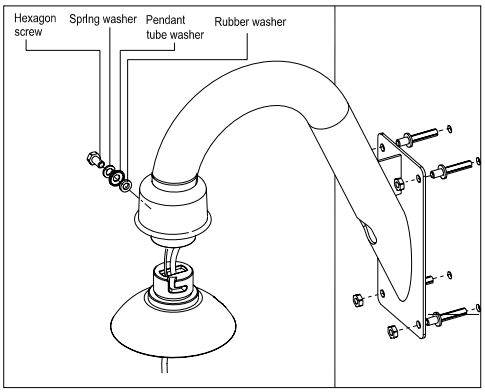
2) Fix the suspension bracket to the wall.

When installing the outdoor PTZ camera, please remember to replace the rubber equipped with the gooseneck/straight tube, with the waterproof rubber packed in the standard package (Refer to section 2. Standard Package Content).

3) Thread the cables through the gooseneck tube and the indoor pole mount adaptor (Indoor camera)/top holder (outdoor camera) and connect them to the PTZ camera.

4) Fix the indoor pole mount adaptor/top holder to gooseneck tube using the equipped screws and washers.

5) Attach the PTZ camera to the indoor pole mount adaptor/top holder and fix them with the screw.

Indoor PTZ Camera (Gooseneck tube + indoor pole mount adaptor)	Outdoor PTZ Camera (Gooseneck tube + waterproof rubber)
	

4.3.2 Wall Box Mounting (ZCA-WBM)

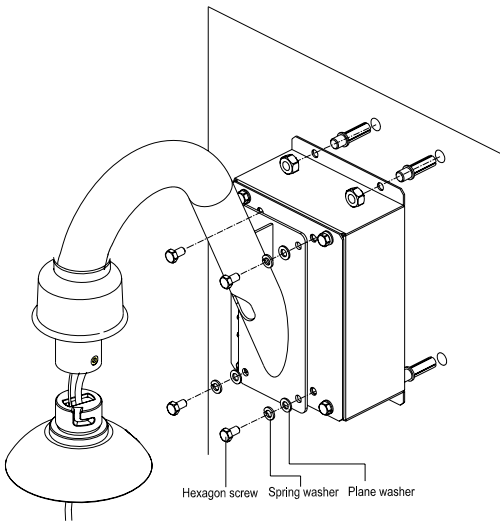
Follow the steps to mount the outdoor PTZ camera with the wall box and gooseneck tube.

1) Fix the wall box to wall.

2) Fasten the gooseneck tube on the wall box.

3) Thread the cables through the gooseneck tube and the top holder and connect them to the PTZ camera.

4) For installation of the cables, top holder and the PTZ camera unit, refer to section 4.3.1 as the steps are the same as for gooseneck mounting.



4.4 Corner Mount

4.4.1 Corner Standard Mounting Plate (ZCA-CST)

With the corner mounting plate and gooseneck, the PTZ camera can be mounted on wall.

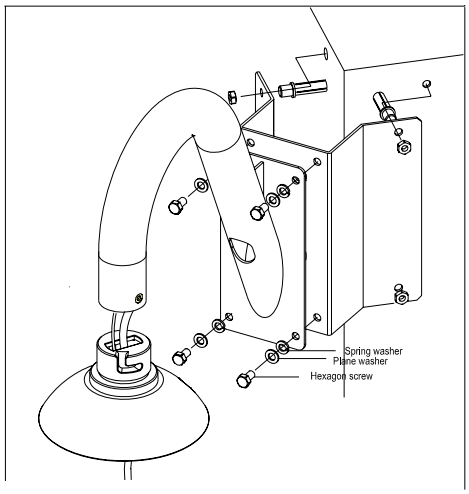
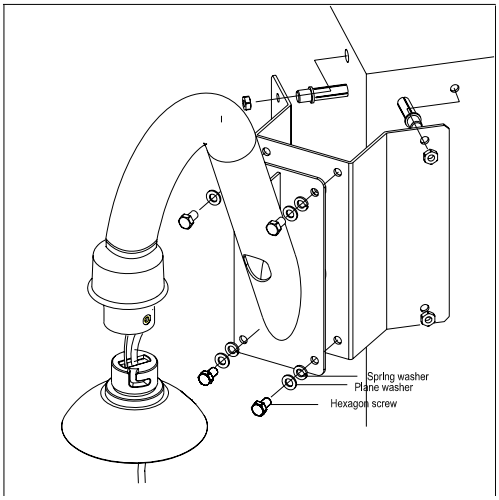
There are various types of corner mounting accessories with different width.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the suspension bracket to the wall.

3) Attach the gooseneck tube to the firmly fixed bracket.

4) For installation of the cables, indoor pole mount adaptor (indoor camera)/top holder (outdoor camera) and the PTZ camera unit, refer to section 4.3.1 as the steps are the same as for gooseneck mounting.

Indoor PTZ Camera (Standard mounting plate + gooseneck tube + indoor pole mount adaptor)	**Outdoor PTZ Camera** (Standard mounting plate + gooseneck tube + waterproof rubber)
	

4.4.2 Corner Thin/Wide Box Mounting (ZCA-CTB/ZCA-CWB)

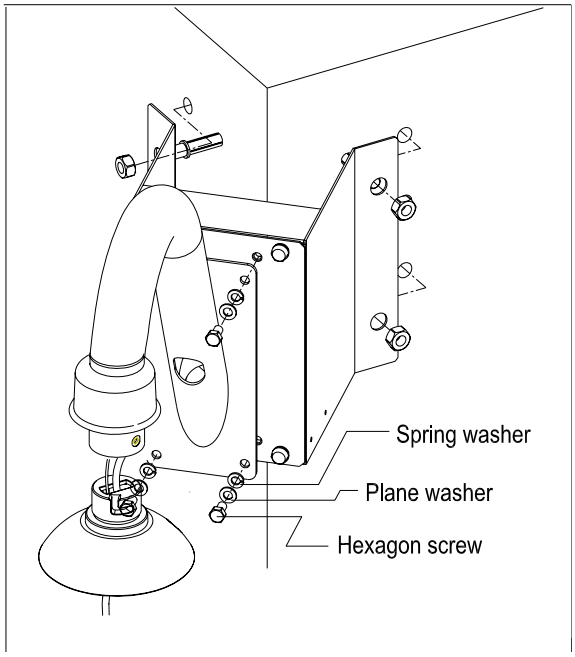
The thin/wide corner box is designed to be installed with a gooseneck tube. Follow the steps to mount the PTZ camera with the corner box and gooseneck tube.

1) Make a cable entry hole on the wall to recess the cables. Otherwise, cables can be threaded through the cable entry hole on the tube.

2) Fix the suspension bracket to the wall.

3) Attach the gooseneck tube to the fixed bracket.

4) For installation of the cables, top holder and the PTZ camera unit, refer to section 4.3.1 as the steps are the same as for gooseneck mounting.



4.5 Pole Mount

4.5.1 Pole Thin/Wide Direct Mounting (ZCA-PTDM/ZCA-PWDM)

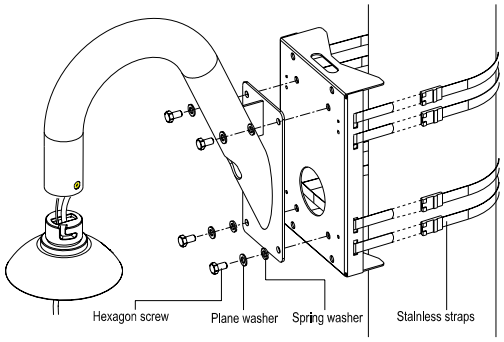
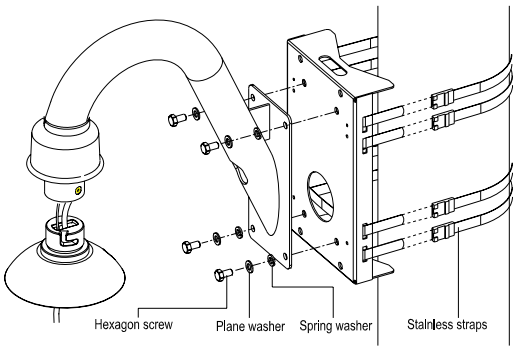
The PTZ camera can be installed on a pole with a thin or wide pole mounting accessory and a gooseneck.

1) Fasten the suspension mounting plate on a pole with equipped stainless straps.

2) Fix the gooseneck tube to the pole mounting plate.

3) Thread the cables through the gooseneck tube and the indoor pole mount adaptor (indoor camera)/top holder (outdoor camera) and connect them to the PTZ camera.

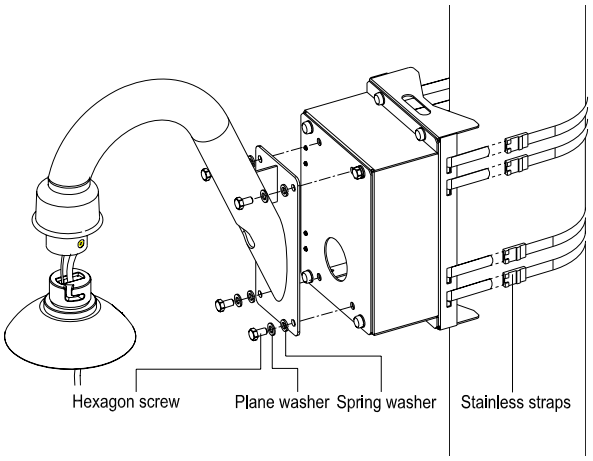
4) For installation of the cables, indoor pole mount adaptor (indoor camera)/top holder (outdoor camera) and the PTZ camera unit, refer to section 4.3.1 as the steps are the same as gooseneck mounting.

Indoor PTZ Camera (Pole mounting + gooseneck tube + indoor pole mount adaptor)	**Outdoor PTZ Camera** (Pole mounting + gooseneck tube + waterproof rubber)
	

4.5.2 Pole Thin/Wide Box Mounting (ZCA-PTB/ZCA-PWB)

Follow the steps to mount the PTZ camera with the pole box and gooseneck tube.

1) Fasten the pole box on a pole with equipped stainless straps.
2) Fix the gooseneck tube to the pole box.
3) Thread the cables through the gooseneck tube and the top holder and connect them to the PTZ camera.
4) Fix the top holder to the gooseneck tube using the screws and washers.
5) Attach the PTZ camera to the top holder and fix them with the screw.



5. System Expansion

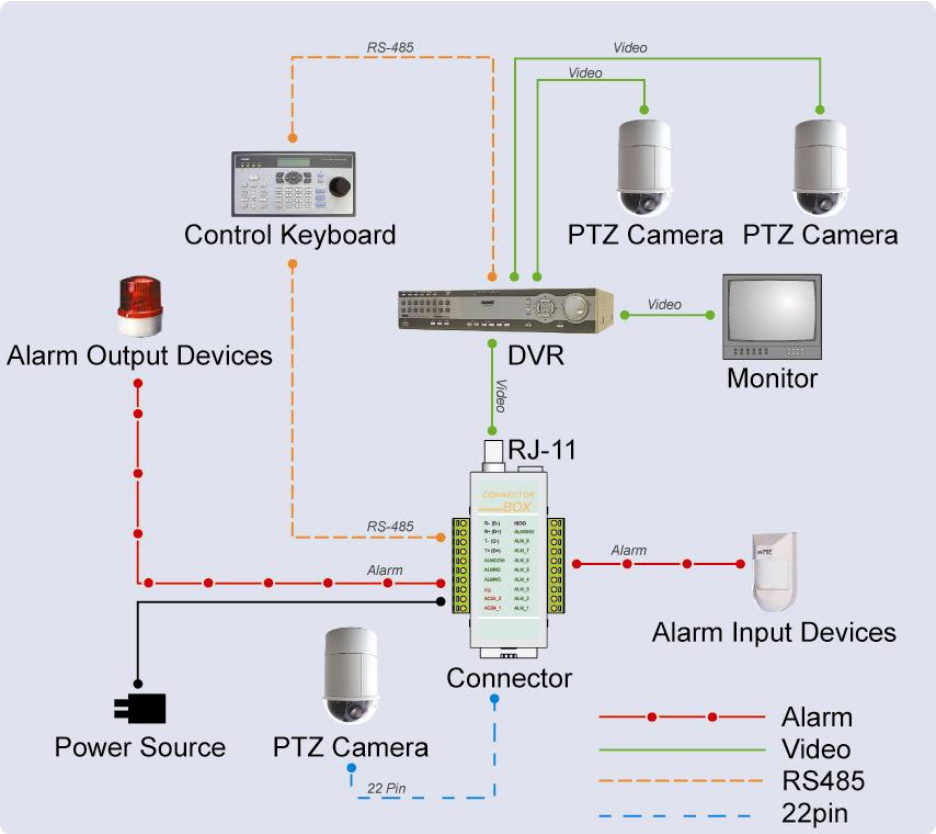
5.1 Connecting with Connector Box (Indoor Application)

Ideally being used in indoor installation circumstances, a connector box provides easy wiring and well organized connection between alarms, cameras and other devices, for easy installation.

To connect the connector box with other devices:

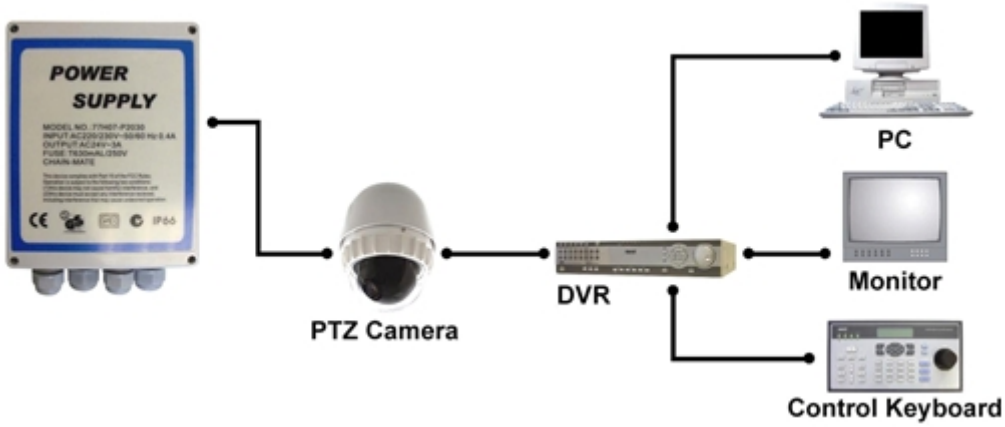
- Use a RS-485 cable (CAT 5 is recommended) to complete RS-485 communication wiring with control devices such as DVRs and control keyboards.
- Use the 22 pin cable to connect the connector box to the PTZ camera.

For more detailed information, please refer to the connector box user's manual.
A system wired with a connector box is illustrated in the following diagram.



5.2 Connecting with Power Box (Outdoor Application)

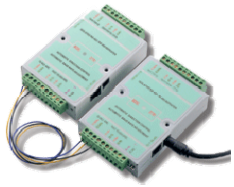
A power box contains a 24V AC adapter, two terminal blocks (for communication and power) and one alarm board. With an IP66 case, the power box is ideal for outdoor installation environment. Two models are available: 100~115V AC power input (ZCA-100-1.5A/ZCA-100-3.0A) and 220~230V AC (ZCA-220-1.5A/ZCA-220-3.0A). Additionally, users can either connect one PTZ camera to one power box and to Internet or to other control devices (DVR, Control Keyboard and monitor), as shown in the diagram below. For more detailed information, please refer to the power box user manual.



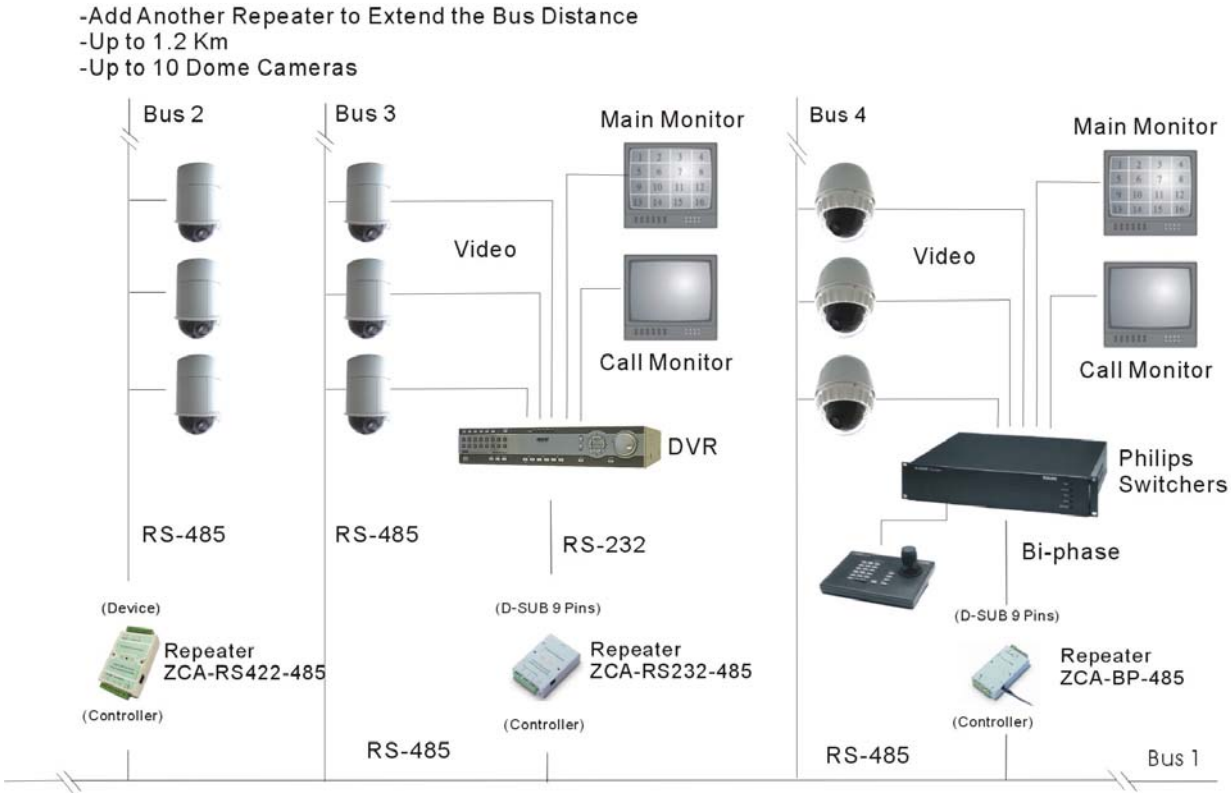
NOTE: One power box can only be connected to one outdoor PTZ camera subject to voltage restriction. In addition, up to two indoor cameras are allowed to be used with one power box.

5.3 Data Formats Transforming

To integrate other surveillance devices with the PTZ cameras, we provide three kinds of converter/repeater to convert the communication formats between devices. If a converter/repeater is used, the total network distance of the surveillance system can be extended, and the connected devices will also be protected. Up to 10 devices are allowed to connect to each repeater. For more detailed information, please refer to the converter/repeater user's manual.

		
ZCA-RS422-485 RS-422/RS-485 Repeater	**ZCA-RS232-485** RS-232 between RS-485/RS-422	**ZCA-BP-485** Bi-Phase to RS-485/RS-422

Connect dome cameras to other devices, as shown in the diagram below, to complete a video surveillance system.



6. System Integration

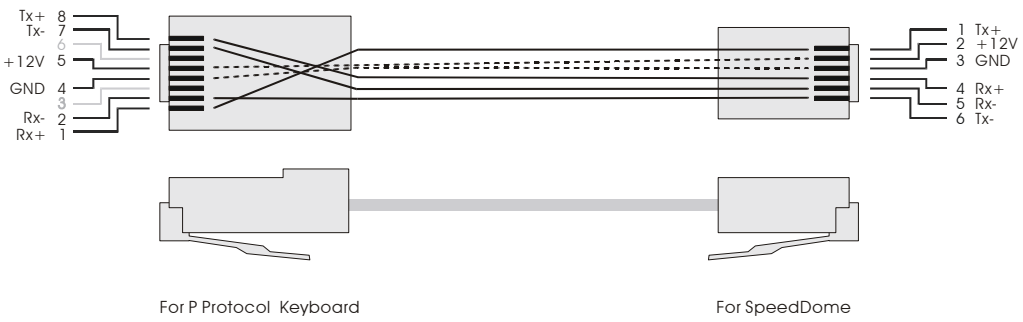
The PTZ camera is allowed to be integrated into other suppliers' surveillance systems with large set of built-in protocols. Refer to the following sections for more information.

6.1 Using Pelco Keyboard

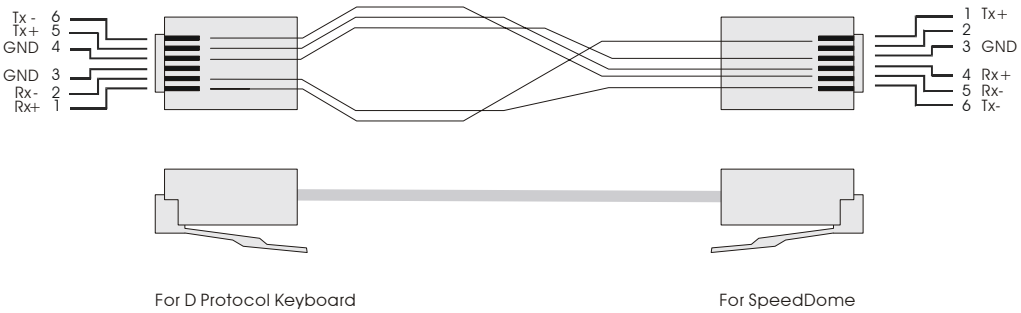
The PTZ camera can be controlled through a Pelco keyboard which is equipped with D and P protocols. Please follow the instruction to manipulate the PTZ camera by a Pelco keyboard.

Function	Instruction
Set Preset	Number key + press and hold <Preset > button for three seonds.
Go Preset	Number key + <Preset> to command a PTZ camera to go to a specific preset position.
Display or hide an OSD menu	7 7 <Preset>
Move the cursor in OSD menu	Move the cursor up/down/right/left by pushing the joystick up/down/right/left respectively
<ENTER>	7 7 <Preset>
Reset the PTZ camera	7 8 <Preset>

Cable Definition (P Protocol Keyboard to PTZ Camera)



Cable Definition (D Protocol Keyboard to PTZ Camera)



6.2 Using Philips Allegiant Keyboard

The PTZ cameras can be integrated into Philips Allegiant systems through ZCA-BP-485 repeater (Bi-Phase to RS-485/RS-422). Please follow the instructions to control PTZ cameras through Philips Allegiant keyboard.

Symbol Definition

<shot>	Command PTZ cameras to go to a specific preset position.
<set>	Set preset position.

Special Function

7 6 <set>	Exit the OSD menu directly.
7 7 <set>	1. Display or hide the OSD menu. 2. A virtual key to issue an ENTER command when the OSD is displayed.
7 8 <set>	Reset the doma camera.
<Iris Open>	Send an ENTER command when the OSD is displayed.

Control PTZ Camera Using Allegiant Keyboard

- Users can move the cursor left/right/up/down through pushing the joystick left /right/up/down.

- Users cannot issue the ENTER command directly. To enable the function, press " 7 7 <Set> ".

Appendix A: Technical Specification

	Item		22× Model	18× Model	23× Model	26× Model
CAMERA						
	Effective pixels	NTSC	380k			
		PAL	440k			
	Horizontal resolution	NTSC	480 TV lines			
		PAL	480 TV lines			
	Scanning area		Progressive 1/4" CCD	1/4" CCD ExView	Progressive 1/4" CCD	1/4" CCD ExView
	Scanning system		PAL, NTSC			
	Synchronisation		Internal / Line lock			
	Video output		1.0 Vp-p / 75Ω, BNC			
	S/N ratio (AGC OFF)		More than 49dB			
	Minimum illumination		1 lux	0.7 lux	0.01 lux, 0 lux (IR illuminator)	0.01 lux, 0 lux (IR illuminator)
	Focal length		4~88 mm	4.1~73.8 mm	3.6~82.8 mm	3.5~91 mm
	Zoom ratio		22× optical zoom	18× optical zoom	23× optical zoom	26× optical zoom
	Digital zoom		×1 ~ ×12 variable			
	Focus mode		Auto / Manual			
	White balance		Auto / Manual			
	Iris control		Auto / Manual			
	Electronic shutter	NTSC	1/60~1/30k sec.	1/1~1/10k sec.	1/2~1/30k sec.	1/1~1/10k sec.
		PAL	1/50~1/30k sec	1/1~1/10k sec	1/1.5~1/30k sec	1/1~1/10k sec
	AGC control		Auto / Manual			
	Back light compensation		On / Off			
OPERATION						
	Built-in protocols		Ganz-S , Ganz-PT, Pelco-P&D, VCL, Philips, AD-Manchester, AD-422 etc.			
	Pan travel		360° continuous			
	Tilt travel		-10°~100°	-10°~190°		
	Manual speed		1°~90°/s			
	Presets		256			
	Preset accuracy	Pan	0.225°			
		Tilt	0.45°			
	Preset speed**	Pan	5°~400°/s, high resolution (both D&E type motor)			
		Tilt	5°~400°/s, standard resolution (D type motor) 5°~400°/s, high resolution (E type motor)			
	Cruise		1			
	Sequence		8			
	Auto pan		4			
	Privacy mask		-	24	8	24
	Pan & tilt proportional to zoom ratio		Yes	Yes	Yes	Yes
	P/T/Z auto-restore		Yes	Yes	Yes	Yes
	Auto turn around		Yes	Yes	Yes	Yes
	Zone title		Yes	Yes	Yes	Yes
	Home function		Yes	Yes	Yes	Yes
	Digital flip		-	Yes	Yes	Yes
	Digital slow shutter		-	Yes	Yes	Yes
	Motion detection		-	Yes	-	Yes
	Wide dynamic range		-	-	Yes	-
	Day/night: IR cut filter		-	-	Yes	Yes
GENERAL						
	Environment		Indoor / Outdoor			
	Controller interface		RS-485			
	Operating temperature		Indoor: 0°C~40°C (32°F~104°F) Outdoor: -50°C~50°C (-58°F~122°F)			
	Waterproof standard		IP 66 Standard (outdoor only)			
	Dimensions	Indoor	Ø131 × 226 mm (5.2 x 7.6 inches)			
		Outdoor	Ø172 x 302.5mm (6.7 x 11.9 inches)			
			Ø190 x 302.5mm (7.5x 11.9 inches), with sunshield			
	Weight	Indoor	1.6kg (3.5 lbs)			
		Outdoor	5.8 kg (12.9 lbs)			
	Power source	Indoor	AC 24 V			
		Outdoor	AC 24 V			
	Power consumption		30 W / 65 W (with heater)			
	Regulatory standards		CE, FCC, IP66			

**There are D&E motors, differentiated by the type of motors of PTZ cameras and presents various “Preset Speed” and resolutions. Standard Resolution: 800 steps/circle. High Resolution: 1600 steps/circle